



<http://dx.doi.org/10.11646/zootaxa.3893.1.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:7ABF7414-EC3E-4072-885A-FAD073AC239F>

## A review of the ectoparasitic mites (Acari: Dermanyssoidea) associated with birds and their nests in Slovakia, with notes on identification of some species

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### Abstract

We review the parasitic mites of the superfamily Dermanyssoidea found in the nests of Slovakian domestic and wild birds (and a few mammals), compiled from new data and literature sources. Three mite genera are included, namely *Dermanyssus* Dugès (Dermanyssidae), *Ornithonyssus* Sambon and *Pellonyssus* Clark & Yunker (Macronyssidae), in which we recognised nine reliably documented species. *Pellonyssus* is represented by one species, *Dermanyssus* by five species, and *Ornithonyssus* by three species. We compiled information on the ecological requirements and host preferences of these mite species, including data on geographic distribution, altitudinal distribution, and occurrence in different habitats and nest types. An identification key to the species occurring in Slovakia is provided, together with taxonomic remarks on the identification and external morphology of some selected species. Parasitic mites have been reported from 119 taxa of Slovakian vertebrates (including man), of which 108 belong to 17 orders of birds. *Dermanyssus americanus* Ewing and *Ornithonyssus bursa* (Berlese) are reported from Slovakia for the first time. Examination of older voucher material collected in Slovakia revealed many misidentified specimens: the name *Dermanyssus hirundinis* (Hermann) has been widely used for misidentified specimens of *Dermanyssus carpathicus* Zeman; *D. americanus* was confused with *D. hirundinis*; while *O. bursa* has been confused with *Ornithonyssus sylviarum* (Canestrini & Fanzago). Slovakia is the second country in Europe with known occurrence of the genus *Pellonyssus*.

**Key words:** Acari, Mesostigmata, parasitic mites, *Dermanyssus*, *Ornithonyssus*, *Pellonyssus*, bird hosts, Slovakia

### Introduction

The mite superfamily Dermanyssoidea is the most ecologically diverse group of Mesostigmata (Walter & Shaw 2005). It includes many species of free-living predators that are abundant in soil, especially in the Hypoaspidae (Laelapidae). A basic free-living stock of this type appears to have given rise to a diverse range of families and genera that are closely associated with vertebrate and invertebrate hosts (Radovsky 1969; Lindquist *et al.* 2009). This large assemblage of derivative groups includes commensals, phoretics, and symbionts, as well as obligate blood-feeding ectoparasites of mammals and birds. Parasitism in these families may be either temporary or permanent, and some species have mixed feeding behaviour that includes blood-feeding as well as predation and scavenging. Both parasitic and non-parasitic species can be found in large numbers in the nests and burrows made by their vertebrate hosts. At least one species, *Dermanyssus gallinae* (de Geer), attacks the domestic hen and other captive birds, and can cause huge economic losses (Sparagano *et al.* 2014).

Some of these species of mites occasionally infest man, and some transmit diseases to humans. Mite-borne rickettsial pox, scrub typhus, and tick-borne pathogens have been relatively well studied, but mites have also been found to transmit other rickettsial agents such as *Rickettsia akari* and *Orientia tsutsugamushi*. Reeves *et al.* (2006) screened 25 species of dermanysoid mites and found that they contained *Anaplasma* spp., *Bartonella* sp., *Spiroplasma* sp., *Wolbachia* sp., and other unclassified Rickettsiales. Non-tick acarines can also transmit or harbour

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#### APPENDIX. Host distribution summary (based on records from Slovakia):

##### Class: Aves

##### Order: Accipitriformes Vieillot, 1816

- Accipiter gentilis* (Linnaeus, 1758), Northern Goshawk  
*Dermanyssus hirundinis*, *Ornithonyssus sylviarum*
- Aquila chrysaetos* (Linnaeus, 1758), Golden Eagle  
*Dermanyssus carpathicus*, *Ornithonyssus sylviarum*
- Aquila heliaca* Savigny, 1809, Eastern Imperial Eagle  
*Dermanyssus* sp.
- Buteo buteo* (Linnaeus, 1758), Common Buzzard